

Beard (Geo. M.)

*Presented by the Author*

THE TREATMENT OF  
Marasmus, Whooping-Cough, and Debility in Children,  
BY ELECTRICITY.

BY GEORGE M. BEARD, M. D., NEW YORK CITY.

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FOR several years past, I have been experimenting with the treatment of very young children by electricity. My first experiments were made with the young, not of human beings, but of dogs. I found that, of a litter of four puppies, the two that were submitted to general faradization grew very much faster, and at the end of a month were decidedly larger, as proved by weight and inspection, than the two that were not so treated. I subsequently made the same experiments on a litter of rabbits, but with unsatisfactory results; for the reason, mainly, that the details of the applications were committed to untrustworthy hands. The applications were overdone. I then carried out the same line of experiment with babies and children of various ages, between one month and ten years. By preference, I selected those cases that were, from any cause, debilitated, and treated them by the methods of general faradization and central galvanization. In some of the cases, there was no specially localized disease, but simply weakness, poor appetite, and, on the part of the babies indisposition to nurse with vigor and satisfaction. I very soon found that my experiments tended to establish two important facts:

1. That very young children, even in the first half of the first

year, could bear electricity—at least the faradic current—in as large doses as adults, without apparent injury.

The infant can bear as much general faradization as the mother in whose arms it rests.

2. That all the sedative and tonic effects of electricity—improvement in sleep, in appetite, in digestion, and in muscular growth, and increase of capacity for work—are realized by children as markedly as by adults, and with fewer apparent exceptions and fewer injurious effects.\*

The experiments that led me towards these provisional conclusions were made mostly on the children of patients in my public practice, and in the families of my friends. I subsequently carried out the same line of experiment in a systematic and extended manner in the "Sheltering Arms" institution, Brooklyn. I was enabled to do this through the courtesy of my friends, Dr. Jerome Walker and Dr. Frank Rockwell, physicians to that institution.

The experiments were begun in the autumn of 1873, and continued for several months. There happened to be, at that time, a large number of cases of whooping-cough in the institution, and these were all at once put under electrical treatment. The details of the applications were carried out at first by myself exclusively; and subsequently, under my direction, by Dr. Sterling, to whom I am indebted for the notes of the cases. The cases of whooping-cough were treated by the methods of central galvanization, and galvanization and faradization of the pneumogastric (external† application); and, in cases where great debility existed, by general faradization. The applications were made, on the average, three times a week, and were from five to ten minutes in duration. In

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\* The powerful sedative and tonic effects of the methods of general faradization and central galvanization, so long insisted on in America, have been fully confirmed in every detail in Germany, by Dr. R. Vater, of Prague. (See a series of articles by him in the *Allgemeine Wiener Medizinische Zeitung*, for May, June, July, August, 1874.) He states that "general electrization will surely and speedily be used by all electro-therapeutists."

† The pneumogastric is sometimes faradized internally by placing an electrode in the pharynx. This method is most disagreeable, and can be used only with interruptions or very mild currents. In the *American Practitioner*, for August, Dr. Jno. O'Reilly, of Louisville, reports cases of whooping-cough successfully treated by external faradization of the pneumogastric.



some of the cases, central galvanization was used at one seance and general faradization at the next, and so on; or one method was used one week and another the following. I soon confirmed the results of my previous experiments in this particular, *that children could bear very large doses of electricity*, without traceable harm. Even children but a few weeks old could be treated by general faradization, with a current of moderate strength, for five, ten or fifteen minutes, and only good effects were observed. Quite frequently the child would go to sleep soon after the application, and, after a short course of treatment, it would develop the now well known tonic effects of that method of electrization—*increase of appetite and of physical vigor*. It would nurse more energetically, exhibit greater liveliness, and, in time, would show a general improvement in nutrition.

Even under the galvanic current, whether used in the method of central galvanization, or confined, as far as possible, on the pneumogastric, no bad results appeared; but, for theoretical reasons, I treated the head with caution. It is, of course, entirely possible that some of the disagreeable effects that follow electrization of adults may have been experienced by some of these infants; it is possible that the malaise, the tiredness, the muscular soreness, and the nervous irritability that annoy adults who have been over-electrized, may be experienced also to some degree by infants, for they have neither the intelligence to observe nor the voice to accurately express their feelings. All these unpleasant sensations may temporarily follow over-treatment of adults, even when the permanent effects are only good. As a rule, however, when patients sleep, and eat, and digest better after electrical treatment, there are no accompanying or complicating evil symptoms; and hence I conclude that *infants are not as susceptible to electrization as adults; that there is some quality in the infantile constitution that renders it capable of bearing electricity, and that the necessity of adapting and dividing the dose according to the age does not hold of electrical applications, whether local or general*.

Besides these facts of the tolerance of electricity and the general tonic influence of the treatment, special improvement in the whooping-cough soon became apparent. The paroxysms became

less violent and distressing and were diminished in frequency, and the whoop was modified in quality. These effects were observed early in the treatment, and in all the cases. It should be added that all the cases had been treated by usual medication—some of them by quinine and belladonna—and that this was suspended when the electrical experiments were begun, or a very few days subsequently. In some of the cases, the duration of the disease—at least of the violent stage of it—was clearly shortened; in others this effect was not apparent; but in all cases there was rapid relief. At first, general and local faradization was tried, but it was subsequently found that central galvanization was more effective, and then that method was used exclusively.

CASE I.—Annie Parks, age two years, had just recovered from diphtheria and pneumonia, when she was taken with whooping-cough—cough very bad at night, raises great quantity of phlegm; considerable fever; cheeks very red and flushed; does not sleep well at night. Commenced treatment, January 17th, by central galvanization, every other day. The 22d inst., the nurse says the cough is better; does not cough so hard; sleeps better; continued to improve slowly until 26th, when the nurse said she coughed only half as often as at first. Every time she has a bad spell, her bowels move and she vomits. February 2, about the same, but, after this application, she began to improve; February 14th, has slept well for the last two nights, and did not cough all night; 19th, only whooped twice during the day—at night perfectly free from cough; 23d, has not whooped in two days, but has a little irritating cough; February 28th, discharged cured.

CASE II.—Florence O'Neil, age twenty months; has had a cough for a week, but has only whooped the last two days; cheeks very red and quite feverish; is very restless; cannot sleep at night, in consequence of a severe, tearing cough; has a whooping spell about every hour; is a very nervous child, and has a sullen, disagreeable disposition; her mother is in the lunatic asylum. Florence has had intermittent fever, and considerable trouble with her stomach and bowels. Commenced treatment, by central galvanization, January 22d—central galvanization every other day; January 29th, has not whooped more than three times



since last application, but she has that tearing cough almost all the day and night, though she does not raise anything; it annoys her so that she cannot sleep at night; February 7th, continues about the same, only she is getting very weak from loss of sleep and no appetite; skin hot and dry, and when in bed she is continuously turning her head from side to side; February 14th, does not sleep or eat, but the cough is somewhat better; February 16th, cough improving; February 19th, has not whooped since last application, but she appears to be failing very fast; has a fever which comes on every night, lasts all night, and keeps her awake until near morning, when she gets a little sleep; her bowels are in very bad condition, frequent discharges of a greenish hue occurring; stomach very irritable; vomits almost everything taken; stimulants always make her warm. During the last thirty-six hours of her life, has had fourteen convulsions. Died, February 23d, 1874.

CASE III.—Johannah Smith, age twelve months—a very small child of her age, and very delicate; has very light eyes, hair and complexion; her father is dead, and her mother is in the insane asylum; has just taken the whooping-cough; only whoops two or three times a day, but has a tearing cough, which bothers her nearly all night. Commenced treatment, by central galvanization, February 26th; February 28th, nurse thinks she is better, but she whoops as often as before; March 7th, continues about the same, only whooping three or four times in twenty-four hours; March 9, her tearing cough as bad as ever, but only whoops about twice in twenty-four hours; March 12, has not whooped since last application; cough is much better during day, but bad at night; 16th, about the same; 19th, whooped once since last application, but her cough is much better; March 29th, has continued to whoop once during the day, but cough much better; sleeps all night; April 13th, has not whooped since last application; cough disappeared. Discharged cured.

RESUME OF SIXTEEN CASES OF WHOOPING-COUGH, TREATED BY  
CENTRAL GALVANIZATION.

1. Frank Klebt, age seventeen months; commenced treatment, October 24th; made three applications; October 27th, recovered.

This case was complicated with congenital syphilis and great debility, for which general faradization was used.

2. William Kien, age five years; commenced treatment, October 24th; made fourteen applications; November 24th, recovered.

3. Lulu Ellis, age two years and nine months; commenced treatment, October 24th; made sixteen applications; November 24th, recovered.

4. Mary A. Graham, age four months; commenced treatment, October 26th; made fourteen applications; November 24th, recovered.

5. Fredda Schmidt, age four years; commenced treatment, October 26th; made sixteen applications; November 28th, recovered.

6. Louisa Brown, age five years; commenced treatment, October 27th; made fourteen applications; December 1st, recovered.

7. Virginia Brown, age two and a half years; commenced treatment, October 27th; made twelve applications; November 24th, recovered.

8. Alice O'Grady, age nine months; commenced treatment, October 26th; made thirteen applications; November 26th, recovered.

9. Katie Brady, age one year; commenced treatment, October 26th; made twenty applications; December 12th, recovered.

10. Isaac Smith, age five years; commenced treatment, October 26th; made sixteen applications; December 5th, recovered.

11. Lillie Askin, age two months; commenced treatment, November 11th; made four applications; November 24th, recovered.

12. John Oakley, age six weeks; commenced treatment, November 21st; made two applications; November 26th, recovered.

13. Alice Duncan, age two months; commenced treatment, November 24th; made twelve applications; December 20th, recovered.

14. Annie Parks, age two years; commenced treatment, January 17th, 1874; made eighteen applications; February 28th, recovered.

• 15. Florence O'Neil, age twenty months; commenced treatment, January 22d; made thirteen applications to February 19th; February 23d, died.

16. Johannah Smith, age twelve months ; commenced treatment, February 26th ; made twenty applications ; April 13th, recovered.

Maximum number of applications----- 20

Minimum number of applications----- 2

Average number of applications ----- 13



